
Space Weather Forecast

Issued on Monday 31 March 2025 at 01:28 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Minor/Moderate (R1/R2) radio blackouts Expected.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was High, with six Moderate-class flares all most likely from the largest sunspot region in the southeast. This region has continued to show development in recent imagery. There are five other sunspot regions on the Earth-facing disc. The next most complex in the centre disk has shown a slight increase in its intermediate portion. This was responsible for an Moderate-class flare on 29 Mar and potential Earth-directed Coronal Mass Ejection (CME), though confidence is low. The rest of the spots show some moderate magnetic complexity but haven't been responsible for any significant flares.

Solar Wind / Geomagnetic Activity: Solar wind parameters were indicative of gradual waning fast winds. The solar wind speed fell from Elevated back to slightly Elevated. The Interplanetary Magnetic Field was at weak levels. The north-south component varied weakly. Geomagnetic activity was Quiet throughout (Kp1-2).

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Further Moderate-class flares are expected, with a slight chance of Strong-class flares.

Solar Wind / Geomagnetic Activity: Solar winds are expected to continue to wane on day 1 (31 Mar) as the fast wind from the large coronal hole we have seen recently, loses its connection to Earth. Solar winds may then see an increase to elevated in the early hours of day 2 (01 Apr) due to a connection to a fast wind from another, albeit much smaller coronal hole. Most CMEs in the last 24-48 hours are expected to miss Earth, however a weak CME from 29 Mar may be directed towards Earth, arriving on day 3 (02 Apr).

Quiet to Unsettled geomagnetic activity is most likely. A chance of Active intervals and a slight chance of G1/Minor storm periods on days 2 and 3 (01/02 Apr) as Earth connects with CH28/+ and/or the CME from 29th.

Energetic Particles / Solar Radiation: There is a chance of a solar radiation storm occurring later day 1 due to recent enhancements above background, with a slight chance thereafter should any

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 370 900 0100 Email: enquiries@metoffice.gov.uk

© Crown Copyright 2025. All Rights Reserved.

further notable flares occur.

Geomagnetic Storms

Geomagnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	5	20	20	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 (M Class)	Yes	80	80	80	80
Very Active	R3-R5 (X Class)	No	15	15	15	15

Solar Radiation Storms (High Energy Protons)

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	30	20	20	20
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = cm ⁻² sr ⁻¹ s ⁻¹)						